

“[t]he aspect of quantifying mRNA that has no utility in and of its self does not constitute a substantial real world value for the claimed invention. Further, a review of the disclosure fails to find where such values of any mRNA that has yet to be found useful under 35 USC 101, has in and of its self been found to satisfy the utility requirements.” In addition, the Office states “[q]uantifying an otherwise non-useful mRNA does not impart a specific, substantial, and utility to same.”

Applicant respectfully traverses the Office’s position, and submits that the specification supports a specific, substantial, and credible utility. Claim 1 recites a “method for determining an absolute concentration of one or more mRNA molecules in a sample”. In the previous response on page 10, Applicant presented Exhibits A (Zhang *et al.* “Large-scale gene expression data analysis: a new challenge to computational biologists.” *Genome Res.* 1999 Aug;9(8):681-8) and B (Gray *et al.*, “Genome changes and gene expression in human solid tumors.” *Carcinogenesis.* 2000 Mar;21(3):443-52.) to demonstrate that the quantification of RNA is known and useful in the art. The instant application teaches an improved method for accomplishing the goal that Zhang *et al.* and Gray *et al.* establish as useful and well-known in the art. Although many more such references were available to those of skill in the art, Zhang *et al.* and Gray *et al.* sufficiently demonstrate that the claimed invention satisfies the utility requirement.

The Office states that “quantifying mRNA that has no utility in and of itself does not constitute a substantial real world value”. Applicant asserts that a primary function of *every* messenger RNA (mRNA) is to serve as a template for the synthesis of proteins by cellular machinery in a process known as translation. mRNA is a key player in the basic function and maintenance of every known cell. It can hardly be said that any mRNA molecule has no utility, even if the function of the protein that the mRNA encodes is not yet understood. Furthermore, it is well known in the art that mRNA levels tend to correspond to protein levels in the cell. As demonstrated by Zhang *et al.* and Gray *et al.*, those of skill in the art recognize that determining levels of mRNA in the cell can be used to characterize phenotypes and gain insight into cellular processes, even where nothing is known about the function of the protein encoded by a given mRNA.

Applicant points out that the instant claim recites a *method* for quantitating mRNA concentration, and does not claim the mRNA itself. Such a method is useful regardless of whether the quantitated mRNA is associated with an expressed sequence tag (EST) or whether the function of the protein it encodes is known or unknown. For example, a researcher may compare the levels of mRNA between a normal cell and a diseased cell. The researcher may identify one or more mRNA transcripts of unknown function whose quantitated level in the diseased cell is different from that in the normal cell using the method of the instant application. This information may be useful to the researcher who may then seek to identify the function of the one or more mRNA transcripts. Thus, quantitation of an mRNA whose function is unknown can be useful to one of skill in the art. Indeed, experiments like this are routine in the art; that Applicant's method facilitates such measurements is plainly useful.

Applicant draws the Office's attention to MPEP 2107.01, section C, which states:

Some confusion can result when one attempts to label certain types of inventions as not being capable of having a specific and substantial utility based on the setting in which the invention is to be used. One example is inventions to be used in a research or laboratory setting. Many research tools such as gas chromatographs, screening assays, and nucleotide sequencing techniques have a clear, specific and unquestionable utility (e.g., they are useful in analyzing compounds). An assessment that focuses on whether an invention is useful only in a research setting thus does not address whether the invention is in fact "useful" in a patent sense. Instead, Office personnel must distinguish between inventions that have a specifically identified substantial utility and inventions whose asserted utility requires further research to identify or reasonably confirm.

Applicant submits that mRNA quantification, like gas chromatographs, screening assays, and nucleotide sequencing techniques that "have a clear, specific and unquestionable utility", because they are useful in analyzing amounts of mRNA molecules, thereby facilitating the acquisition of important information and insight.

On page 9 of the previous response, Applicants pointed out that the claimed method may be used to measure the abundance of known yeast transcripts. In the current Office Action, the Office states "the claims are not limited to the analysis of known yeasts. Further, even if the yeasts are known, the utility must reside, either directly or indirectly, with the claimed method". Applicants submit that the quantitation of known yeast mRNA is but one example of how the method may be

used. The skilled artisan would immediately recognize the broad utility of the presently claimed method and would be able to execute it given the teachings of the instant specification for the purposes of quantitating any mRNA of his choosing – whether or not she knows the function of the encoded protein. The method is not limited to the quantitation of the mRNA of any particular type of cell or organism.

In refusing to consider the publications provided by Applicant with the prior response, the Office states that “[t]he situation at hand is analogous to that of *Ex parte Gray* (BPAI, 1989) 10 USPQ2d 1922 where it was held that publications do not qualify as either evidence or expert testimony such as that provided in a declaration under 37 CFR 1.132... The present showing does not provide assurances.” The present circumstances do not parallel those discussed in the cited case. Applicants point out that *Ex parte Gray* turned on whether a conclusory statement – that is, an expression of opinion – made in a published reference could serve as expert testimony. In the present case, Applicants submitted Exhibits A and B in order to demonstrate the extensive use of a method (mRNA quantitation) in the art, not to allege the truth of a subjective statement contained therein. Even if the Office disregards the statement from Zhang *et al.* (“[t]he use of high-density DNA arrays to monitor gene expression at a genome-wide scale constitutes a fundamental advance in biology”) which Applicant pointed to on page 10 in the recent response, the two publications, in conjunction with the instant application, are sufficient to demonstrate specific, substantial, and credible utility of the claimed method. Simply put, these researchers factually describe experiments in which the absolute quantity of mRNA is measured; the Office, should it choose to disregard this fact, must offer counterevidence of its own, not merely handwave the references away on procedural grounds.

MPEP 2107.01 states:

Deficiencies under the “useful invention” requirement of 35 U.S.C. 101 will arise in one of two forms. The first is where it is not apparent why the invention is “useful.” This can occur when an applicant fails to identify any specific and substantial utility for the invention or fails to disclose enough information about the invention to make its usefulness immediately apparent to those familiar with the technological field of the invention. *Brenner v. Manson*, 383 U.S. 519, 148 USPQ 689 (1966); *In re Fisher*, 421 F.3d 1365, 76 USPQ2d 1225 (Fed. Cir. 2005); *In re Ziegler*, 992 F.2d 1197, 26 USPQ2d

1600 (Fed. Cir. 1993). The second type of deficiency arises in the rare instance where an assertion of specific and substantial utility for the invention made by an applicant is not credible.

One particular aspect of this section merits further attention. The third sentence notes that a deficiency arises when “an applicant fails to identify any specific and substantial utility for the invention...” (emphasis added) The Office plainly has not adhered to this standard in conjuring up one particular way in which the invention might be put to use and alleging that that use lacks utility. Merely because a car can be driven endlessly in a circle or a calculator can be buried underground out of reach of a user does not mean that such devices lack patentable utility. Even if the use proposed by the Office in fact lacked utility, contrary to Applicant’s position discussed in detail above, the identification of a possible use that lacks utility is not sufficient to show that the invention lacks any utility.

Applicants submit that the Office has failed to demonstrate how the instant application does meet the utility requirement of 35 USC 101. The Office has shown neither that the invention is not useful nor that assertion of utility is not credible. Applicants respectfully request that the Office remove the rejection.

*Claim rejections under 35 USC §112, first paragraph*

Claims 1-3 are rejected under 35 U.S.C. 112, first paragraph. Specifically, the Office alleges that the claimed invention is not supported by either a specific, substantial, and credible asserted utility or a well established utility for the reasons set forth above. The Office further asserts that one skilled in the art would not know how to use the claimed invention. Applicant traverses for the same reasons presented in the above response to the rejection under 35 U.S.C. 101.

**CONCLUSION**

In view of the above amendments and remarks, Applicant believes the pending application is in condition for allowance.

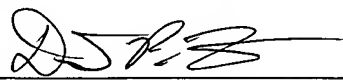
Amendment dated May 27, 2008  
Reply to Office Action of February 25, 2008

Application No. 10/509,275  
Docket No.: VOSS-P01-011

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-1945, under Order No. VOSS-P01-011 from which the undersigned is authorized to draw.

Dated: May 27, 2008

Respectfully submitted,

By 

David P. Halstead, J.D., Ph.D.

Registration No.: 44,735

ROPES & GRAY LLP

One International Place

Boston, Massachusetts 02110

(617) 951-7000

(617) 951-7050 (Fax)

Attorneys/Agents For Applicant